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Ingroup and role identity influences on the initiation and maintenance of students' voluntary attendance at peer study sessions for statistics

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Abstract

Background: Although class attendance is linked to academic performance, questions remain about what determines students' decisions to attend or miss class.

Aims: In addition to the constructs of a common decision-making model, the theory of planned behaviour, the present study examined the influence of student role identity and university student (ingroup) identification for predicting both the initiation and maintenance of students' attendance at voluntary peer-assisted study sessions in a statistics subject.

Sample: University students enrolled in a statistics subject were invited to complete a questionnaire at two time points across the academic semester. A total of 79 university students completed questionnaires at the first data collection point, with 46 students completing the questionnaire at the second data collection point.

Method: Twice during the semester, students' attitudes, subjective norm, perceived behavioural control, student role identity, ingroup identification, and intention to attend study sessions were assessed via on-line questionnaires. Objective measures of class attendance records for each half-semester (or 'term') were obtained.

Results: Across both terms, students' attitudes predicted their attendance intentions, with intentions predicting class attendance. Earlier in the semester, in addition to perceived behavioural control, both student role identity and ingroup identification predicted students' attendance intentions, with only role identity influencing intentions later in the semester.

Conclusions: These findings highlight the possible chronology that different identity influences have in determining students' initial and maintained attendance at voluntary sessions designed to facilitate their learning.

Keywords: class attendance; theory of planned behaviour; role identity; ingroup identification; peer-assisted study sessions

Researchers have demonstrated that both class attendance and student effort are predictive of student performance, including performance in those subjects that students traditionally find challenging, such as statistics (e.g., Lalonde & Gardner, 1993; Lan, 1995; Rodgers, 2001; Rose, Hall, Bolen, & Webster, 1996; Townsend & Wilton, 2003; Tremblay, Gardner, & Heipel, 2000). Although student effort is recognised as important in determining student performance, class attendance is found to predict final grade over and above personal characteristics, such as motivation and ability (Devadoss & Foltz, 1996), and will comprise the focus of the present investigation. Class attendance is important to examine given its strong proximal relationship to grades and can be a behaviour more amenable to strategies facilitating change than people's inherent ability or motivation.

Previous research has suggested that a number of personal and environmental factors may be determinants of missing a core class. A number of studies have reported that the most common rationale for missing class is illness (chosen by between 80% and 84% of students; Gump, 2004; Longhurst, 1999). Longhurst identified at least 15 student and environmental factors that students claim had prevented them from attending class in the previous week. These factors included illness, weather, social activities, transport problems, work commitments, and seeing their boy/girlfriend. Longhurst also examined the level of commitment of these students and found a negative relationship between student dedication and the likelihood of missing a class because of one of these factors. The only exceptions to this commitment-attendance relationship were illness and family obligations, indicating that even committed students may miss classes for these reasons. In addition to student nominated reasons for absenteeism, investigations of correlations between absenteeism and student characteristics also reveal that factors such as time spent studying and gender (Gump, 2004; Wyatt, 1992) may be useful predictors of class attendance and that there may be different predictors of missing a liked class versus a disliked class. Wyatt found that time spent

studying was related negatively to missing both liked and disliked classed and that females were more likely than males to miss a class. In addition to these predictors, missing a disliked class was also related negatively to Grade Point Average and related positively to the frequency of alcohol consumption. Regardless of the impact of attendance of student performance, Marburger's (2006) study of a mandatory attendance policy indicates that the solution to student absenteeism is not simple. Although students who were absent during a class were more likely (9-14%) to respond incorrectly to a question related to the content missed than students who were present, the difference in proportion of incorrect answers between the mandatory class and the class without an attendance policy was only 2%.

In addition to class attendance, additional tutoring has been reported as a predictor of student success. One method of additional tutoring, peer-led assistance, may be beneficial to both the students being tutored and those providing the tutoring. In studies of student clinical skills, Graham, Burke, and Field (2008) revealed no significant difference between the final grades of students who attended classes led by a trained peer and expert-led tutorial classes. In a number of disciplines typically perceived as difficult, including statistics, chemistry, and physics, Xu, Hartman, Uribe, and Mencke (2001) found that peer-led classes were of most benefit to those with average and below average levels of prior ability. Further, a positive peer environment may address some of the uncomfortable feelings and anxious reactions students have reported experiencing with regards to statistics (Gal & Ginsberg, 1994; Perney & Ravid, 1991). Other qualitative studies of peer-led tutoring have reported a number of benefits including more flexible and student-centered support, further development of peer-tutor skills, intrinsic tutor-satisfaction, fostering of university community, and increased educational support beyond typical university budgets (Carmody & Wood, 2009).

Despite the knowledge that class attendance predicts student academic success, few researchers have conducted studies predicting either academic class or supplementary

academic class attendance. For those studies that have investigated the issue, there has been more of an emphasis on demographic (e.g., gender; Sleigh, Ritzer, & Casey, 2002) and personality (Furnham, Chamorro-Premuzic, & McDougall, 2002; King, 1998) factors underlying attendance/absenteeism, rather than a systematic and comprehensive examination of the main determinants of students' decision-making processes to attend class. Previous research has examined attitudes as a predictor of class attendance but, despite their positive beliefs about succeeding in their grades and performing behaviours which would facilitate successful achievement, many students still fail to achieve pass grades (e.g., Lalonde & Gardner, 1993; Shultz & Koshino, 1998). On the basis of evidence of an inconsistency between people's attitudes and their behaviour that is not limited to the domain of academic achievement (see Fishbein & Ajzen, 1975), this study utilised a well-validated behavioural decision-making model, the theory of planned behaviour (TPB; Ajzen, 1991) to examine the impact of psychosocial influences in the prediction of university students' class attendance. This model incorporates other influences, in addition to attitudes, that impact on people's decisions. The present study tested the utility of the TPB in predicting both the initiation and maintenance of university students' class attendance at peer-assisted study sessions for a first-year statistics subject.

Theory of Planned Behaviour

The TPB proposes that intention to perform a behaviour is the most proximal determinant of behavioural outcomes. Intention, in turn, is predicted by three constructs: attitudes, subjective norms, and perceived behavioural control (Ajzen, 1991). Attitudes are the positive or negative evaluations held by an individual about performing a particular behaviour. Subjective norms refer to the perceived pressure from important others to perform or not to perform an action. Perceived behavioural control, which is similar to the concept of self-efficacy, refers to one's perceived ease of performing a behaviour and is also proposed to

influence behaviour directly. The constructs of attitudes, subjective norms, and perceived behavioural control are thought to be belief-based. Support for the TPB has been found for a wide range of behaviours including those examining educational behaviours such as school students' career-information seeking (Shevlin & Millar, 2006) and students' study behaviour (Sideridis & Kaissidis-Rodafinos, 2001). A meta-analytic study (Armitage & Conner, 2001) found that the TPB accounted for an average of 39% of the variance in people's intentions and 27% of the variance in people's behaviour.

Theory of Planned Behaviour and the Prediction of Class Attendance

Only a few researchers have employed the full TPB model to examine class attendance. Ajzen and Madden (1986) investigated class attendance among 169 undergraduate college students and monitored class attendance over a period of 16 sessions. Consistent with the specifications of the TPB model, attitudes, subjective norm, and perceived behavioural control were all significant predictors of students' intentions to attend class, accounting for 68% of the variance. For behaviour, intention, but not perceived behavioural control, was reported as a significant predictor, accounting for 36% of the variation in class attendance. Other researchers (e.g., Prislin & Kovrlija, 1992; Webb, Christian, & Armitage, 2007) also have tested the utility of the TPB in predicting class attendance and found differential impact of the TPB predictors, in conjunction with other factors (e.g., self-monitoring, personality, implementation intentions), on intentions and behaviour. In a study examining supplementary class attendance, White, Thomas, Johnston, and Hyde (2008) found evidence in support of attitude and perceived behavioural control in the prediction of intentions to attend class (accounting for 53% of the variance in intentions), with intention as the sole predictor of class attendance (accounting for 17% of the variance in behaviour).

Additional identity influences

The few TPB studies that have been conducted in the prediction of class attendance, as is the case of most studies using the TPB as a predictive model, indicate that there is still a large proportion of variation in class attendance intentions and behaviour that is unaccounted for. These findings suggest that the TPB is not capturing all of the important influences on students' class attendance decisions and that the model's advantage of parsimony may result in a less than comprehensive understanding of the major determinants of decision-making for this behaviour. Ajzen (1991) states that the TPB is, in principle, open to the inclusion of additional predictors as long as there is a strong theoretical justification for their inclusion and that they capture a significant portion of unique variance in intentions or behaviour. There is a range of other possible variables that may assist in predicting students' class attendance, including personal and contextual factors. Given the importance of the student identity to many university students, some of the determinants of decisions to attend may relate to identity factors reflecting one's role perceptions as a student as to what behaviours are expected of them in adherence to the role and what is normative behaviour among groups of fellow students they identify with. Increasingly, TPB researchers have included an assessment of the potentially generative force of a person's role identity in their studies. In addition, many researchers recognise that identification with behaviourally-relevant referent groups influences our decision-making. To examine the effect of these identity-related influences on students' decisions to attend class, we included an assessment of both role identity and university student (ingroup) identification within the TPB.

Role Identity. According to identity theorists (Stryker, 1987), people have distinct components of self for each of the role positions they occupy in society. Identity theorists conceive of the self as a collection of identities that reflect the roles that a person occupies in the social structure and define a role identity as a set of behavioural tendencies. When a person engages in role identity congruent behaviours, it serves to confirm and validate their

status as a role member (Hogg, Terry, & White, 1995; Terry, Hogg, & White, 1999). Researchers have found support for the addition of role identity within the TPB across a variety of behavioural domains. For example, in a study predicting the recycling intentions and behaviour of 143 community residents, Terry et al. established that role (self) identity predicted recycling intentions and that this effect was not dependent on past recycling behaviour. Importantly, the impact of role identity on beahvioural intentions has been established in the context of class attendance including college retention decisions (Biddle, Bank, & Slavings, 1987). Biddle et al. showed in a large sample study that role identity predicted intention to stay at school even after taking into account other influences such as background factors, achievements, and campus experiences. Further, in their TPB study predicting attendance at supplementary study sessions of 77 university students, White et al. (2008) found support for the importance of student role identity (the more students considered attending peer-assisted study sessions as an important aspect of their role of being a student) as a significant predictor of intentions to attend the supplementary classes. In addition to the TPB constructs of attitudes and perceived behavioural control, White et al. found that inclusion of a measure of role identity, capturing both the personal and social aspects of role identity within a specific behavioural context (the same scale used in the present study), predicted student intentions related to supplementary class attendance.

Ingroup Identification. Although role identity has been shown to impact on students' class attendance decisions, it is possible that an additional type of identity influence that relates to important group memberships may contribute to students' decisions in this context. Social identity theorists (e.g., Hogg & Abrams, 1988; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) argue that the normative influence from an ingroup with whom one identifies is very powerful in determining group members' behaviour. The influence of social identity on behavioural decision-making can be explained through a social identity (Hogg &

Abrams, 1988) and self-categorisation theory (Turner et al., 1987) perspective. According to the theories, when social identity is salient, the individual constructs context-specific group norms based on shared intra-group information and assimilates themselves to these group norms (Turner, 1982). For those who identify more strongly with an ingroup, behaviour is more likely to conform to the ingroup norms. In the context of university students, if there is a sense of identification and belonging to a student body, conformity to behaviours that are normative, such as attending classes, should be more likely to occur. There is evidence in other domains that identification with an ingroup leads to ingroup-conforming actions (e.g., Ashforth & Mael, 1989; Smith, 2003). In the current study, then, participants' identification with students at their university was examined to determine its influence on intentions to engage in the normative behaviour of attending class sessions.

Importantly, the TPB construct of subjective norm is considered theoretically distinct from other social and identity conceptualisations represented in other theories such as identity theory (Stryker, 1987) and social identity theory (Turner et al., 1987). Subjective norm relates specifically to the perceived pressure from important others to perform or not perform a behaviour whereas role identity is one's own assessment as to the extent to which their behaviours conform to role expectations. Further, ingroup identification is the extent to which one's group memberships are psychologically meaningful to them in that they identify as a group member as opposed to the explicit pressure component from others inherent in the TPB's subjective norm component. While expected to possess some overlap, researchers have demonstrated that subjective norm from the TPB, role identity, and social identity theory constructs are distinct (see Terry et al., 1999).

The Present Study

The aim of the present study was to test the basic premises of the TPB and examine the identity influences of role identity and university student (ingroup) identification in

students' class attendance decision-making. The behaviour under investigation was student attendance at peer-assisted statistics study sessions. Trained upper-level undergraduate students (know as PASS leaders) facilitated these voluntary sessions, referred to broadly in the literature as 'supplementary instruction' (e.g., Blanc & Martin, 1994). The programme involved weekly 1-hour study sessions and were designed to supplement existing statistics lectures and tutorials via the process of group discussion and activities (e.g., quizzes that included multiple choice questions and written response questions about the previous week's lecture material). The students of the peer-assisted statistics study sessions set the agenda for the session with the PASS leader guiding (not teaching) the learning of relevant topics. The study sessions were conducted in a fun, relaxed, and non-threatening learning environment where students were given special treats (e.g., lollies) to encourage participation.

Previous studies examining class attendance (e.g., White et al., 2008) have predicted attendance across a whole academic semester. Indeed, the majority of research using the TPB to explain behaviour has focused on predicting behavioural initiation and only a few researchers have employed the TPB model to predict the maintenance of behaviour (e.g., Armitage, 2005). Researchers have suggested that different cognitive processes may govern the initiation and maintenance of behaviour. For example, favourable expectations of future outcomes are suggested to predict behavioural initiation whereas satisfaction with the received outcomes of the behaviour is predictive of behavioural maintenance (see Hall & Fong, 2007; Rothman, 2000). As such, experiencing positive outcomes after initiation of the behaviour may affect one's valuations of the behaviour and allow one to form a belief that the balance of future costs and benefits of maintaining the behaviour is worth it (Hall & Fong, 2007). Additionally, the predictive ability of self-efficacy is found to be stronger for initiators of the behaviour than for maintainers (Linde, Rothman, Baldwin, & Jeffery, 2006). Maintenance of behaviours is also suggested to rest on the degree to which the motivation to

perform the behaviour is internalised; thus, greater behavioural persistence requires personally endorsing the value of the behaviour and integrating it with other central values and aspects of the self (see Deci & Ryan, 2000).

Given these findings which suggest that experiences after initiation of a behaviour may influence one's evaluations of the benefits of maintaining the behaviour (Hall & Fong, 2007), in the present study, the predictors of attendance were assessed at two half-semesters (referred to herein as 'Terms'). This use of multiple assessment times enabled an investigation of whether the factors determining subsequent attendance decision-making change as a result of students' experiences throughout the semester (e.g., a mid-semester exam). Specifically, this study built on White et al.'s (2008) previous examination of class attendance across a semester. The present study assessed if role identity emerged as important for supplementary class attendance initiation and/or maintenance and to establish if an additional identity influence, that of ingroup identification derived from peer membership groups, influenced student decision-making in this context. In relation to the specifications of the TPB (Ajzen, 1991) with additional identity influences, it was expected that intention to attend peer-assisted study sessions would be influenced by students' attitudes towards attending peer-assisted study sessions, subjective norm, and perceived behavioural control (Hypothesis 1). Furthermore, according to the TPB, it was expected that intention to attend study sessions and perceived behavioural control would predict peer-assisted study session attendance (Hypothesis 2). Finally, hypotheses were formulated in relation to the additional identity influences. It was expected that, on the basis of role identity theory (e.g., Stryker, 1987), the more students considered attending study sessions as an important aspect of their role of being a student, the stronger their intentions to attend peer-assisted study and, based on social identity theory (e.g., Turner et al., 1987), the more students identified and felt a sense of

connectedness as a student at their university, the stronger their intentions to attend peer-assisted study sessions (Hypothesis 3).

Method

Design

Ethical clearance was applied for and granted from the University's Human Research Ethics Committee (reference number 0700000682). The study employed a prospective design for predicting class attendance across two terms of an academic semester. Participants were invited via email and in person at lectures by a researcher who was not part of the teaching staff to complete an on-line questionnaire at two time points: prior to the semester's commencement, and at the middle of the semester. At the completion of the academic semester, respondents' student numbers were matched with peer-assisted study session attendance records for each term (coded by student number only) to obtain measures of attendance and the participants' final grades. This method created two phases of data collection separated by a mid-semester break (also known as 'vacation'): Term 1, which involved the measurement of questionnaire-based material at the start of the semester and attendance records from the start of semester to the mid-semester break, and Term 2, which involved the collection of questionnaire-based data at the recommencement of studies after the mid-semester break to the end of the semester (see Figure 1). The significance of collecting data at the start of the two terms allowed us to monitor changes in student intentions and attendance behaviours between Terms 1 and 2 and also to monitor attendance behaviours as students settle into the course and encounter more complex content.

Insert Figure 1 about here

Participants

Participants, university students enrolled in a psychological research methods subject at a major Australian university, were invited by email and in person at a lecture by a researcher who was not part of the teaching staff to complete a questionnaire at two time points across the academic semester: prior to the semester's commencement (the start of Term 1) and at the middle of the semester (start of Term 2). A total of 79 students (64 females, 15 males) completed questionnaires at the first data collection point of the study. The sample accounted for over half (55%) of the students enrolled in the subject. Of the Term 1 participants, 58% (n = 46) completed the next questionnaire at the start of Term 2. Analyses were conducted to assess for any differential effects between those participants at Term 1 who did and did not complete the questionnaires at Term 2 on the demographic factors and TPB variables at Term 1; no significant differences were found.

At the two data collection time points, the researcher presented on-line instructions which explained the purpose of the questionnaire, that students' involvement was voluntary and that all responses were confidential. Some participants received partial course credit (for another introductory psychology subject) for their involvement. In consenting to participate in the project, participants agreed that a researcher independent of the teaching staff for the subject could have access to their attendance records and final grades to match their data, thus enabling the storage of data records by code identifier only.

Measures

The target behaviour examined in this study was *attending peer-assisted study sessions for PYB110 [the statistics subject]*. To maximise congruence between the prediction and criterion variables, the TPB variables were measured at the same level of specificity in terms of context, action and time (Ajzen & Fishbein, 1970). The TPB items were constructed in line with recommendations (Ajzen, 1991) and were each scored on a 7-point Likert scale, except for attitude, which was scored on 7-point semantic-differential scales. Some items

were negatively worded to reduce response bias and were subsequently recoded for analyses so that all items were worded in the same (positive) direction. Prior to the commencement of the semester, the TPB questions referred to the target behaviour as "attend/attending every peer-assisted study session for PYB110 until the mid-semester break". At the middle of the semester, the TPB questions referred to "attend/attending every peer-assisted study session for PYB110 from now until the end of semester".

Theory of Planned Behaviour Measures

Intention. Two items were used to assess the strength of intention to attend peer-assisted study sessions at the start of each term (e.g., "I intend to . . . ", " and "It is likely that I will . . . "; *strongly disagree* [1] to *strongly agree* [7]).

Attitude. Attitude towards attending study sessions was assessed using three items (e.g., "For me, . . . would be"; *unpleasant* [1] to *pleasant* [7], *good* [1] to *bad* [7] (reversed item), *and unfavourable* [1] to *favourable* [7].).

Subjective norm. The measure of subjective norm was obtained using two items (e.g., "Most people who are important to me would approve of me . . . " and "Those people who are important to me would want me to . . . "; *strongly disagree* [1] to *strongly agree* [7]).

Perceived behavioural control. Perceived behavioural control was assessed using two items (e.g., "I have complete control over whether I . . . " and "I am confident that I could . . . "; *strongly disagree* [1] to *strongly agree* [7]).

Identification Measures

Role identity. Five items were used to measure student role identity beliefs in relation to attending the study sessions (adapted from Godin et al., 1996, and White et al., 2008) to assess the extent to which attending peer-assisted study sessions for first year statistics was an important component of the respondents' role identity as students enrolled in the subject. These items included: "Generally speaking, I think it is appropriate for me as a student

enrolled in PYB110 to . . . ", "Thinking of myself as a student enrolled in PYB110, it is not important for me to . . .", "For me, . . . will not assist in fulfilling my role as a student enrolled in PYB110, "As a student enrolled in PYB110, I think it is important for me to . . . ", and "To what extent do you think that . . . is a significant part of your role as a student enrolled in PYB110?". The first four items were scored *strongly disagree* [1] to *strongly agree* [7] and the last item was scored *very unimportant* [1] to *very important* [7]. The five items were averaged to create the role identity scale.

Ingroup identification. Participants' strength of identification as a student at their university was measured using the 4-item ingroup ties dimension of Cameron's (2004) ingroup identification scale. The ingroup ties dimension was chosen to reflect most accurately the notion of identification and connectedness to the student body (e.g., "I feel strong ties to other students enrolled at QUT [*the university*]", "I have a lot in common with other students enrolled at QUT", "I find it difficult to form a bond with other students enrolled at QUT", and "I don't feel a strong sense of being connected to students enrolled at QUT"; *strongly disagree* [1] to *strongly agree* [7]). The 4 items were averaged to create the ingroup identification scales.

Behaviour Measure

An objective measure of class attendance was obtained at the end of the academic semester by matching students' peer-assisted study session attendance behaviour (recorded at each session) with their questionnaires using student number as identifiers only. For attendance up until the mid-semester break (Term 1), peer-assisted study session attendance behaviour was coded, out of a possible total of 5 sessions, on a continuous scale representing the number of sessions attended from 0 (*did not attend any sessions*) to 5 (*attended all sessions*). The same procedure was followed for study sessions attended from the mid-semester break until the end of the semester (Term 2). Although not the focus of the present

study, it should be noted that peer-assisted study session attendance had a small-to-medium positive relationship with overall performance (i.e., grade on a 7-point scale) for the subject (r = .28, p < .05), based on Cohen's (1992) criteria.

Results

Descriptive Statistics

Table 1 shows the bivariate correlations, means, standard deviations, and reliabilities among the variables for both terms. An examination of class attendance records identified that few students attended all 10 sessions (3%), with many students choosing not to attend at all (39%). On average, students attended 3.05 peer-assisted study sessions (SD = 3.41). All of the study's scales were reliable. All of the predictors were correlated highly with behavioural intentions, with attitude and role identity as the strongest correlates of intention. Intention was the strongest correlate of class attendance behaviour at both terms.

Insert Table 1 about here

Predictors of Intention to Attend Study Sessions

A hierarchical regression analysis predicting behavioural intentions to attend class was performed for the data collected in each term. For Term 1, components of the TPB (attitude, subjective norm, perceived behavioural control) were entered in the first step of the analysis, with the additional identity influences of role identity and ingroup identification entered in the second step. For Term 2, the steps were similar except that the predictor variables had been assessed at the beginning of Term 2 and a preliminary (first) step of the analysis was introduced accounting for the Term 1 outcome variable of intentions (see Table 2).

For Term 1, Step 1 accounted for a significant 56% of the variance of behavioural intentions, $F(3, 75) = 30.53$, $p < .001$. The entry of the Step 2 variables added significantly to

the prediction of behavioural intentions, accounting for a further 15% of behavioural intentions (R^2 change = 0.15, F change = 18.62, $p < .001$). After all variables were entered into the analysis, attitude, perceived behavioural control, ingroup identification, and role identity were the significant predictors of behavioural intentions.

For Term 2, Step 1 (intentions at Term 1) accounted for a significant 74% of the variance in Term 2 behavioural intentions, $F(1, 45) = 126.77$, $p < .001$. Step 2 accounted for a significant 10% of the variance in behavioural intentions, R^2 change = 0.10, F change = 8.77, $p < .001$. The entry of the Step 3 variables added significantly to the prediction of Term 2 behavioural intentions, accounting for a further 3% of behavioural intentions, R^2 change = 0.03, F change = 4.33, $p < .05$. After all variables were entered into the analysis, Term 1 intentions (control variable) as well as the Term 2 attitude and role identity variables were the significant predictors of Term 2 behavioural intentions.

Insert Table 2 about here

Predictors of Study Session Attendance

Examination of the attendance data revealed that many participants did not attend any of the classes throughout the term; consequently, the outcome measures of Term 1 and Term 2 attendance underwent an inverse transformation (with responses recoded to preserve the original direction of the data) to correct this skew. Hierarchical regression analyses predicting peer-assisted study session attendance were conducted to predict class attendance for each term. For Term 1, intentions and perceived behavioural control were entered at Step 1 with attitude, subjective norm, role identity, and ingroup identification at Step 2. For Term 2, the steps were similar except that the predictor variables were assessed at the beginning of Term

2 and a preliminary (first) step of the analysis was introduced accounting for the Term 1 outcome variable of class attendance (see Table 3).

For Term 1, Step 1 of the analysis emerged as significant, accounting for 24% of the variance in behaviour, $F(2,75) = 11.66$, $p < .001$. Addition of the Step 2 variables was not significant (R^2 change = 0.00, F change = 0.09, $p = 0.99$). After all variables were entered into the equation, intention was found to be the only significant predictor of class attendance.

For Term 2, Step 1 (attendance at Term 2) accounted for a significant 34% of the variance in behaviour, $F(1, 45) = 23.31$, $p < .001$. Addition of the Step 2 variables accounted for a significant 10% of the variance in Term 2 class attendance, R^2 change = 0.10, F change = 3.70, $p < .05$. Addition of the Step 3 variables was not significant (R^2 change = 0.04, F change = 0.68, $p = .61$). After all variables were entered into the equation, intention at Term 2 was found to be the sole significant predictor of Term 2 class attendance behaviour.

Insert Table 3 about here

Discussion

In the present study, we sought to examine the impact of identity-related influences in determining students' supplementary class attendance decisions in a subject perceived by many students to be challenging. Specifically, we investigated the impact of the identity factors of both role identity, emanating from identity theory, and ingroup identification, from a social identity/self-categorisation theory perspective within this context, utilising a well-validated decision-making model, the theory of planned behaviour. Examined across two terms in order to assess both attendance initiation and maintenance, we found some support for the TPB in that attitude and perceived behavioural control (in Term 1 only) predicted students' class attendance intentions and intention predicted attendance behaviour. For the

identity influences, both ingroup identification and role identity exerted significant independent effects on intentions to attend classes in the first term, with role identity significantly predicting attendance intentions for the second term.

Theory of Planned Behaviour

Overall, we found general support for the predictions of the TPB. The TPB variables accounted for a large proportion of the variance (56% and 69% for Terms 1 and 2, respectively) in the prediction of students' intention to attend class and a smaller, but still substantial proportion of variance in the prediction of class attendance (23% and 41% for Terms 1 and 2, respectively). In partial support of Hypothesis 1, attitude and perceived behavioural control predicted intentions to attend peer-assisted study sessions for Term 1 and attitude predicted intentions for attendance for Term 2. Subjective norm did emerge as a significant Step 1 predictor of attendance intentions for Term 2 but was, however, no longer significant once the additional identity influences were taken into account.

These findings suggest that students are more likely to intend to attend peer-assisted study sessions if they have positive attitudes towards peer-assisted study sessions (throughout the semester) and believe that they have control over attending peer-assisted study sessions (in Term 1 only). The finding that attitude predicts intentions to attend peer-assisted study sessions throughout semester and perceived behavioural control only predicts intentions when commencing the semester suggests that temporal factors may influence behavioural motivation. After initiating attendance at peer-assisted study sessions, students may have experienced positive outcomes from attending and, as such, come to believe that future attendance would be beneficial (see Hall & Fong, 2007; Rothman, 2000). Furthermore, and in line with research in other domains (see Linde et al., 2006), perceiving that one has the ability to attend peer-assisted study sessions is more important for students when deciding to initiate their attendance than when deciding to continue attending. It is also possible that other

efficacy measures, such as collective efficacy, may be more influential after the group is established. Previous research examining interdependent student groups has demonstrated that high individual self-efficacy is related to higher collective, or group, efficacy towards the completion of a task (Alavi & McCormick, 2008).

Contrary to Hypothesis 1, but consistent with much previous TPB research (see Ajzen, 1991), subjective norm was not predictive of behavioural intentions. The perceived pressure from important others in relation to performing the behaviour had little impact on students' intentions to attend peer-assisted study sessions (especially once the additional variables were taken into account). This finding reflects the growing criticism of the subjective norm component as a limited representation of social influences on behaviour and reinforces the need for a reconceptualization of the role of norms in the TPB (see Terry & Hogg, 1996; Terry et al., 1999).

Consistent with Hypothesis 2, for predicting students' class attendance behaviour, intentions were found to predict peer-assisted study session attendance for both terms; therefore, students were more likely to attend peer-assisted study sessions if they intended to do so. Contrary to Hypothesis 2, however, perceived behavioural control did not emerge as a significant predictor of behaviour which is consistent with other TPB studies predicting class attendance (e.g., Ajzen & Madden, 1986; Webb et al., 2007). Given that the participants in the present study were predominantly first year students with potentially little knowledge about the concept of supplementary study sessions, their estimates of control over behavioural performance may have been unstable.

In summary, the support for the TPB in the present study provides evidence for its utility in predicting class attendance. Nevertheless, the unexplained variance points to the need to continue to examine additional variables, including identity-related influences, that may serve to understand further students' decision-making in this context.

Additional Identity Influences

For the proposed additional identity influences (Hypothesis 3), role identity was an independent predictor of intentions across both terms, over and above the standard TPB constructs. The finding that role identity significantly predicted intentions suggests that the more students considered attending peer-assisted study sessions to be an important part of their own role as a psychology student, the more likely they were to intend to attend peer-assisted study sessions. The finding is consistent with the premises of identity theory (Stryker, 1987) and previous research examining role identity within the TPB (e.g., Biddle et al., 1987; Terry et al., 1999) including in the context of class attendance (White et al., 2008).

For ingroup identification, the results of the present study showed that students with an overall sense of connectedness with their fellow students reported stronger intentions to attend the supplementary class sessions, a finding consistent with a social identity/self-categorisation approach (e.g., Hogg & Abrams, 1988; Turner et al., 1987) to the representation of social influences on decision-making. Interestingly, however, the finding for ingroup identification emerged only in the prediction of students' attendance intentions at the commencement of semester and was not a significant predictor of intentions for Term 2. This finding would suggest that a sense of identification with other students may lead to stronger intentions to engage in peer-normative behaviour to trial programmes at their introduction without necessarily being associated with continued involvement. Instead, it appears that a students' role identity is associated more reliably with class attendance intentions over time, consistent with theories that suggest behavioural persistence is associated with one's level of internal motivation to engage in the behaviour and requires that one identifies with the importance of the behaviour and assimilates it with their other central values (see Deci & Ryan, 2000).

For example, a student may be motivated to continue to attend peer-assisted study sessions because they have assimilated the regulation of class attendance into their overall learning goals and style of learning irrespective of their level of identification with other students as the semester progresses. It should be noted that the selection of the group 'university' may not have the most salient level of group identification for the students and that future research should consider examining more proximal groups such as school or department. Overall, the findings of the present study provide evidence that a consideration of identity influences as determinants of student decision-making is a useful avenue for future examination, especially in the context of other behaviours students can undertake to facilitate their learning such as participation in student-generated learning groups (e.g., Lizzio & Wilson, 2005) and the use of on-line learning tools and discussion forums.

Applied Implications

There are a number of applied implications to facilitate student learning based on the results of the present study. Given that attitudes were predictive of class attendance intentions provides the basis for the development of advertising to encourage students to attend supplementary study schemes by encouraging an overall favourable evaluation of the scheme in promotional materials with a focus on the benefits of obtaining greater knowledge of statistics and achieving better grades. As perceived behavioural control emerged as a significant predictor of behavioural intentions at the beginning of the semester, this finding suggests that, in initial promotions of a study session scheme, educators should encourage students that session attendance is within their control. A focus on goal-setting and time management techniques may facilitate students' perceptions that it is up to them to be able to prioritise class attendance above other commitments. In addition, educators should stress how easy it is to attend the sessions by emphasising the convenience of campus-based supplementary study sessions. As ingroup identification predicted attendance intentions at the

beginning of the academic semester, educators promoting session offerings may benefit from highlighting the bonds students have with their fellow students, emphasising a sense of connectedness with other students to encourage class attendance, at least in the preliminary stages of a programme. Finally, directly appealing to an individual's role as a student and the associated importance of attending study sessions may be the most useful strategy for educators in strengthening students' intentions to participate in study session schemes both at the commencement of and throughout the academic semester.

Strengths, Limitations, and Future Research Directions

Despite the strengths of the study such as the assessment of the study's key variables at multiple points across the academic semester and an objective assessment of attendance behaviour, there are a number of methodological issues to note in the current study. First, the sample size was small (especially in Term 2 with attrition of nearly half the sample) and may not be representative of the student body. We were limited, however, in the number of available university subjects that offered supplementary study sessions where class attendance was monitored explicitly. Furthermore, despite our best efforts to ensure anonymity for participants, the use of an on-line questionnaire may have inhibited responses. Finally, it is important to note that only a relatively small amount of the variance was accounted for in attendance behaviour (especially predicting students' attendance until the middle of the semester), highlighting the need to identify variables comprising the post-volitional factors proposed to bridge the intention-behaviour gap (see Gollwitzer, 1993, 1999). The findings of Webb et al.'s (2007) implementation intention intervention (where students formed specific plans to encourage attendance) are very promising in efforts to achieve this aim. It may be helpful if future research continues to employ both correlational and experimental paradigms and examines the behaviour via longitudinal analytic strategies to examine the applied implications of this and related research, isolating specific strategies (e.g., a focus on

perceptions of control throughout a semester or manipulations of student role identity) to identify the most useful approaches to encourage class attendance.

Summary

Overall, this study has provided some support for the TPB in the prediction of supplementary study session attendance in that students' attitudes towards attending class and their sense of control over being able to attend (at least in the preliminary stages of a programme) impact on their intentions to do so. Students' intentions to attend class, in turn, predict class attendance. Importantly, support was found for the inclusion of additional identity influences in predicting students' class attendance. Throughout the semester, the more students considered attending study sessions as an important aspect of their role of being a student, the stronger their intentions to attend peer-assisted study sessions. Finally, the more that students identified with their student body and felt a sense of connectedness to their fellow students, the more likely they were to be willing to attend the class sessions in the programme's preliminary stages; for continued intentions to attend class, however, it was the perceptions of their role as a student that influenced their decision-making.

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Table 1

Descriptive Analysis of Measurement for Peer-Assisted Study Session Attendance at Term 1 (below the diagonal) and Term 2 (above the diagonal): Bivariate Correlations, Means, Standard Deviations, and Alpha Coefficients

Variable	1	2	3	4	5	6	7	*M*	*SD*	α
1. Attitude	-	.51***	.39**	.55***	.53***	.79***	.51***	4.86	1.61	.86
2. Subjective norm	.56***	-	.13	.70***	.37*	.60***	.28	5.43	1.43	.88***
3. PBC	.34**	.12	-	.13	.28	.38**	.35*	5.41	1.58	.58***
4. Role identity	.71***	.50***	.17	-	.44**	.71***	.37*	4.29	2.24	.92***
5. Ingroup identification	.28*	.34**	.24*	.24*	-	.57***	.28	4.98	1.58	.95
6. Intention	.72***	.50***	.39***	.77***	.39**	-	.63***	4.46	1.44	.92
7. Class attendance[a]	.36**	.23*	.20	.38***	.13	.47***	-	1.20	1.71	
M	5.12	5.83	5.79	5.22	5.50	4.56	1.85	-		
SD	1.32	1.22	1.20	1.87	1.25	1.32	1.95		-	
α	.81	.82***	.45***	.92***	.91	.87				-

Note. Correlations, means and standard deviations below the diagonal are for Term 1; correlations, means and standard deviations above the diagonal are for Term 2. PBC = Perceived behavioural control. All constructs were measured on 7-point scales except

for Class attendance which was scored from 0 to 5. Where a construct was measured with two items, Pearson's *r* (and significance) is reported.

[a]One item only.

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 2

Hierarchical Regression Analyses Predicting Behavioural Intention for Term 1 and Term 2

Step	Predictor	β_1	β_2	β_3
Term1				
1	Attitude	.57***	.21*	
	Subjective norm	.16	.05	
	Perceived behavioural control	.18*	.19**	
2	Role identity		.53***	
	Ingroup identification		.14*	
ΔR^2		.56	.15	
ΔF		30.53***	18.62***	
R^2		.56	.71	
F		30.53***	34.73***	
Term 2				
1	Term 1 intention	.86***	.58***	.51***
2	Attitude		.35**	.28**
	Subjective norm		.05	-.06
	Perceived behavioural control		.09	.10
3	Role identity			.22*
	Ingroup identification			.08
ΔR^2		.74	.10	.03
ΔF		126.77***	8.76***	4.33*
R^2		.74	.84	.87
F		126.77***	55.02***	44.07***

*p <.05. **p <.01. ***p <.001.

Table 3

Hierarchical Regression Analyses Predicting Class Attendance for Term 1 and Term 2

Step	Predictor	β_1	β_2	β_3
Term 1				
1	Intention	.51***	.53**	
	Perceived behavioural control	-.05	-.03	
2	Attitude		-.05	
	Subjective norm		.04	
	Role identity		.02	
	Ingroup identification		-.06	
ΔR^2		.24	.00	
ΔF		11.66***	.09	
R^2		.24	.25	
F		11.66***	3.75**	
Term 2				
1	Term 1 class attendance	.59***	.30	.27
2	Intention		.37*	.54*
	Perceived behavioural control		.13	.10
3	Attitude			.10
	Subjective norm			-.08
	Role identity			-.10
	Ingroup identification			-.18
ΔR^2		.34	.10	.04
ΔF		23.31***	3.70*	.68

R^2	.35	.44	.48
F	23.31***	11.20***	5.04***

*p <.05. **p <.01. ***p <.001.

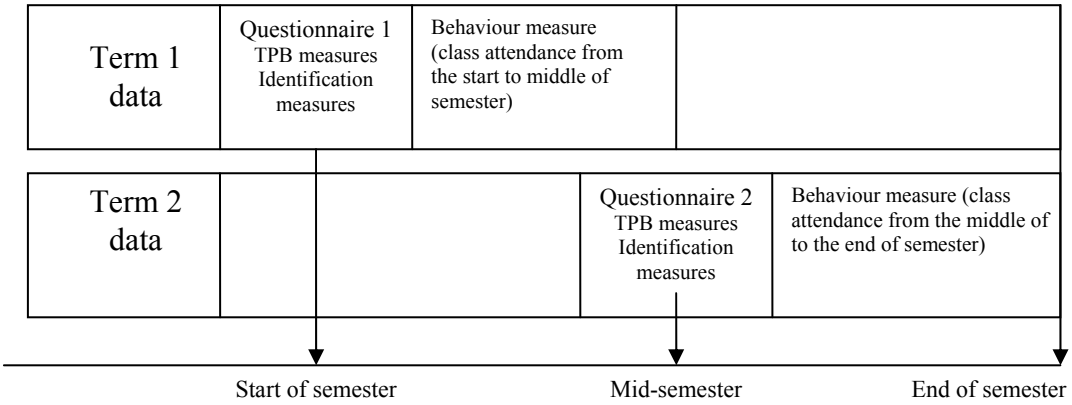

Figure 1. The data sources accessed across the semester to collect Term 1 and Term 2 data